



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/285,773	04/05/1999	GARRY A. MERCALDI	M4065.165/P1	4121

7590 12/13/2001

THOMAS J D'AMICO  
DICKSTEIN SHAPIRO MORIN & OSHINSKY  
2101 L STREET NW  
WASHINGTON, DC 200371526

EXAMINER

UMEZ ERONINI, LYNETTE T

ART UNIT PAPER NUMBER

1765

DATE MAILED: 12/13/2001

23

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/285,773

Applicant(s)

MERCALDI ET AL.

Examiner

Lynette T. Umez-Eronini

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) \_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 22, and 88 are rejected under 35 U.S.C. 102(b) as being anticipated by Takeuchi (US 5,017,513).

Takeuchi teaches removing a foreign film from a semiconductor structure by immersing the semiconductor structure in a solution of phosphoric acid, hydrofluoric acid and alcohol an alcohol (column 4, lines 25-27). The solution is the same as a non-aqueous composition consisting essentially of two inorganic acids, wherein one of said inorganic acids is selected from the group consisting of phosphoric acid.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-7; and 10-11, 13-15 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi (US 5,017,513) (English abstract of SU 593110A) as applied to claims 1 and 22 respectively.

Takeuchi differs in failing to specify a polyhydric alcohol as, in **claims 2-6, 11, and 26**; and the C<sub>2</sub>-C<sub>6</sub> alcohol is selected from the group consisting of ethanol, propanol, isopropanol, iso-butanol and n-butanol, as, in **claim 7**. Conventional non-aqueous solvents include organic liquids such as alcohols, ketones and esters. Commonly used alcohols include ethylene glycol and propylene glycol.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to employ a conventional solvent such as propylene glycol for the purpose of producing an effective etchant.

Takeuchi differs in failing to specify processing variables that are recited in **claims 13-15 and 33-35**.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to employ any of a variety of operational variables such as those claimed by the applicant. They are well-known variables in the etching art and known to affect both the rate and quality of the etching process. Conducting routine experimentation to obtain the best-etched product would optimize the selection of a particular value. Changes in concentrations or other process conditions of an old process do not impart patentability unless the recited ranges are critical, i.e.; they produce a new and unexpected result. *In re Aller et al.*, 105 USPQ 233.

Art Unit: 1765

5. Claims 39-41 and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holoubek J (English title of CS 8801729 A).

Holoubek teaches an etching bath that is a mixture of nitric and hydrofluoric acid, which is diluted with ethylene glycol.

Holoubek differs in failing to explicitly teach the etching composition comprises propylene glycol, **in claims 39-41 and 83**; and isopropanol, **in claim 82**.

Conventional non-aqueous solvents include organic liquids such as alcohols, ketones and esters. Examples of conventional non-aqueous solvents include isopropanol, ethylene glycol and propylene glycol.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to employ a conventional non-aqueous composition such as isopropanol or propylene glycol for the purpose of diluting the etchant.

Holoubek differs in failing to specify processing variables that are recited in **claims 39-41**.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to employ any of a variety of operational variables such as those claimed by the applicant. They are well-known variables in the etching art and known to affect both the rate and quality of the etching process. Conducting routine experimentation to obtain the best-etched product would optimize the selection of a particular value.

Art Unit: 1765

***Allowabl Subject Matter***

6. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 89-93 are allowed. The following is a statement of reasons for the indication of allowable subject matter: Prior art lacks a teaching of a non-aqueous etching composition consisting essentially of: an alcohol and two inorganic acids are selected from the group consisting of sulfuric, boric, perchloric, carbonic, and sulfurous.

***Response to Arguments***

8. Applicant's arguments with respect to claims 1-7, 9, 13-15 22-29, 33-35, and 39-41 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***


9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chough (US 3,767,491), Couture et al (US 3,642,549), Hattori et al. (US 5,615,613), and Maeno et al. (US 5,714,407) are relied upon to teach non-aqueous solvents.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 703-306-9074.

Application/Control Number: 09/285,773  
Art Unit: 1765

Page 6

ltue  
December 12, 2001

  
BENJAMIN L. UTECH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700